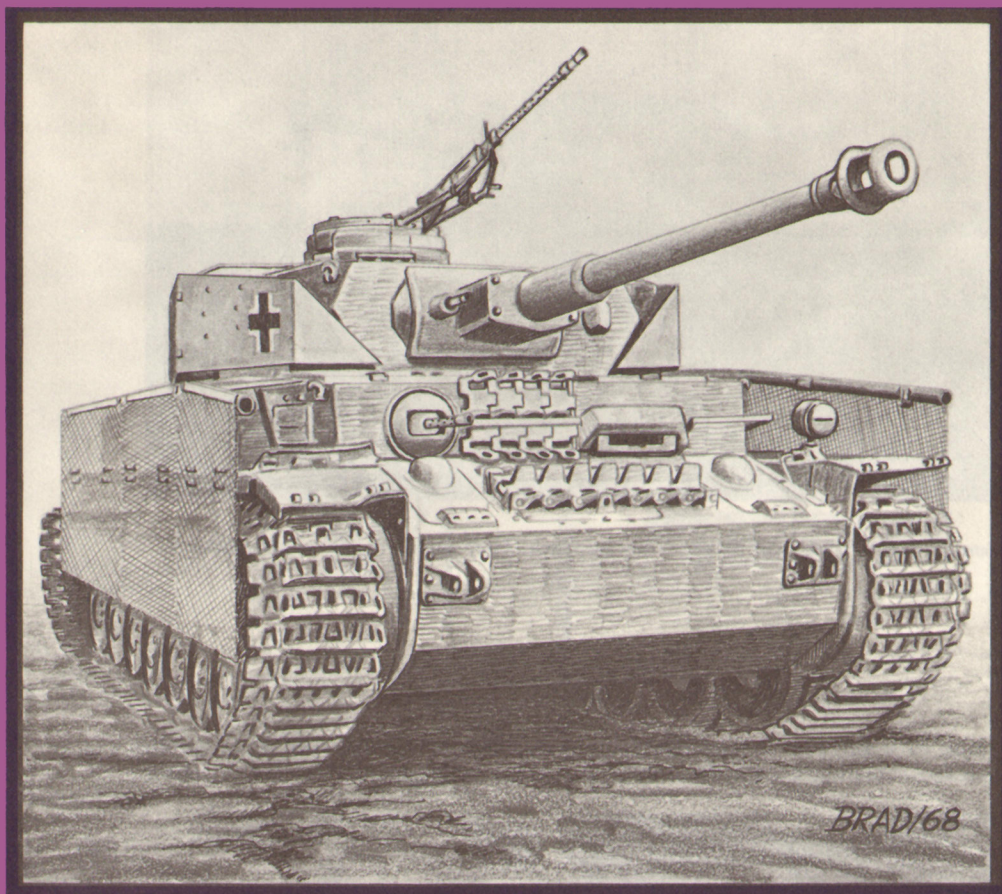


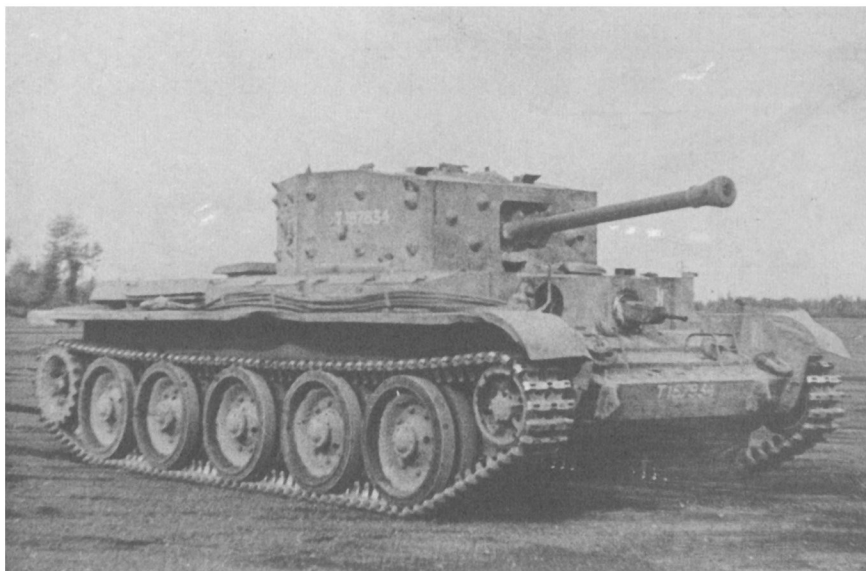


SERIES SIX

Tank, Cruiser, A27M, CROMWELL, Mk IV	(UK)
Panzerkampfwagen IV ausf J(10/BW) - 1944/45	(GE)
Sturmgeschutz 7.5 cm. Kanone auf PzKw III Ausf D-1941	(GE)
Truck Utility, $\frac{1}{4}$ ton, 4 x 4, JEEP, M38 and Trailer $\frac{1}{4}$ ton, M100 SEEP.	(US)



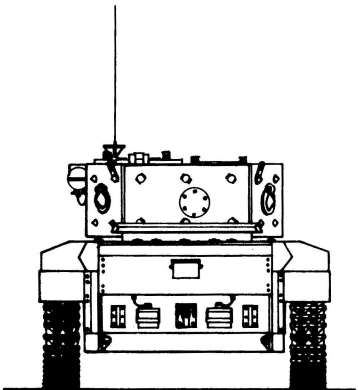
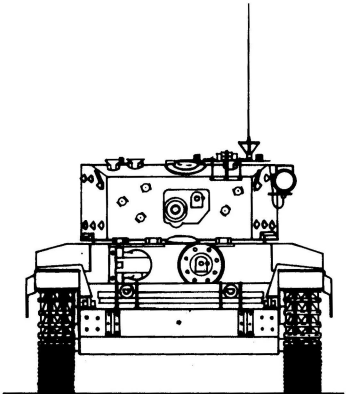
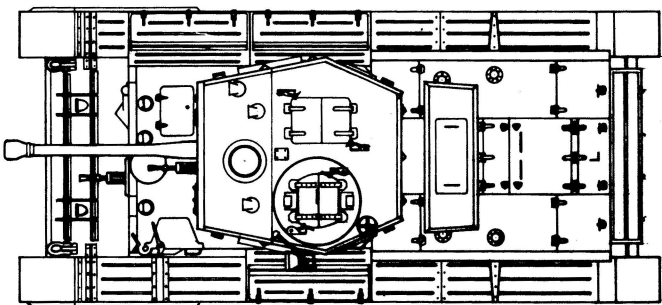
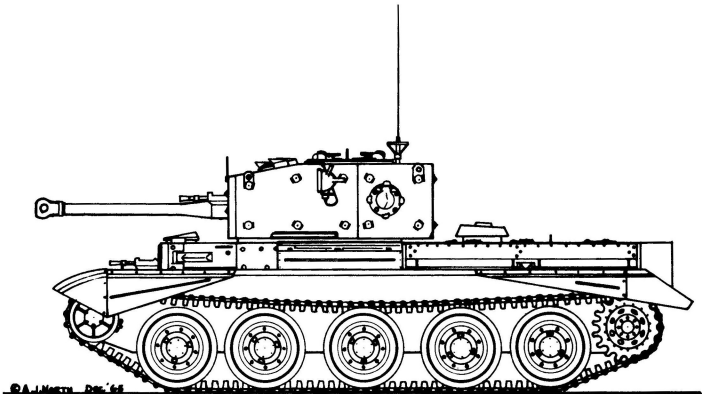
MILITARY VEHICLE PRINTS



Cromwell 1 with 6 pdr. gun and auxiliary fuel tank. Note counterweight on gun muzzle

Pz Kpfw IV in RAC Tank Museum, Bovington, is an Ausf D reworked to model G configuration it has several features found in the model J, including a turret apron (Bellona Warpics photo)





Tank, Cruiser, A27M, CROMWELL, Mk IV

Scale 1:76 (4 mm. to 1 foot). Drawn by A. J. D. North

Tank, Cruiser, A27M, CROMWELL, Mk IV

Derived from the Cavalier and Centaur interim designs, which were themselves developments of the Crusader tank, the Cromwell was significant as being one of the most successful British tanks of World War 2. It was the first to be powered by the highly successful Rolls-Royce Meteor engine which gave it a good turn of speed - the fastest British tank - and good manoeuvrability. Conceived as a 'heavy' cruiser to take a big gun and a powerful engine, the Cromwell weighed, at 27½ tons, considerably more than any previous cruiser design.

The relatively simple hull was made up of a single armour plating front and rear, but double on the sides. This was arranged so that the inner plate housed the suspension units while the outer plate covered and protected them. The axles were pivoted on suspension tubes, and these were attached to the hull floor. Double plate construction was also a feature of the turret, which consisted of a welded inner structure with heavy outer plates bolted on to it. This arrangement, though crude, was effective and, more important, simplified production. Hydraulic traverse was provided. The 12-cylinder rear mounted Meteor engine - a derivative of the Merlin aero-engine - had a five speed gearbox and a dry twin plate clutch. Steering was by controlled epicyclics and the turn circle depended on the gear chosen by the driver. In neutral the Cromwell could turn on its own axis. The oil and fuel tanks were sited each side of the engine. There were three cooling intakes, and an air outlet at the rear. This latter could be covered by a hinged flap allowing the vehicle to wade to 4 feet.

The Cromwell had a crew of five - commander, gunner and loader in the turret, and driver and machine gunner on the right and left front hull respectively. A side escape hatch was provided on the front left corner of the hull, with another fitted retrospectively on the right for the driver. This modification was made in the light of service experience, when it was found that the turret sometimes fouled the driver's access hatch preventing his normal means of egress. Internally the Cromwell was as comfortable as practicable, though there was certainly little spare space when the vehicle was fully stowed and ammunitioned.

The first three marks of Cromwell were armed with a 6 pdr. gun, but the remainder had the 75 mm. gun or a 95 mm. howitzer as a close support variant. Marks 5 and 7 were produced in an all-welded form - an innovation for British tanks at the time - as well as in the original riveted method of construction. Both methods of construction incorporated cross-bracing girders across the floor and top of the inner hull. These together with two bulkheads ensured absolute rigidity of the hull.

Cromwells were widely used in armoured formations of 21 Army Group from D-Day onwards, proving useful and reliable though no match for the German Panthers. Post war, Cromwells equipped the 8th Hussars in Korea and latterly were given a new lease of life when many were converted to Charioteer tank destroyers.

Cromwell Mk IV - Specification

Crew : 5

Weight : 27½ tons (laden)

Performance

Max. road speed: (original) 38 mph
(revised) 32 mph with reduced
final drive

Fording: 4 feet. Step: 3 feet Trench: 7 feet 9 ins.

Power: Wt. ratio: 22 bhp per ton

Track pressure: 14.7 lbs. per sq. in.

Range: 87-174 miles (without auxiliary tank).

Cross-country: 58-87 miles

Fuel capacity: Two 58 gallon tanks plus one
auxiliary 30 gallons

Oil: 14½ gallons in two tanks

Water: 12 gallons. Cooler: 14 gallons

Dimensions

Length overall: 20 feet 10 ins.

Width overall: 9 feet 6½ ins.

Height over aerial mount: 8 feet 2 ins.

Ground clearance: 16 ins. (approx.)

Track centres: 8 feet 1¾ ins.

Turret ring diameter: 57 ins.

Track on ground: 12 feet 3 ins. (approx.)

Track width: 14 ins.

Modelling

Airfix Centurion wheels are suitable for a
scratch-built Cromwell model

Mechanical Details

Engine: 1 x Rolls-Royce Meteor V-12 60 degrees,
600 hp at 2,550 rpm

Gearbox: 5 forward 1 reverse, dry twin plate clutch

Brakes, gears, steering, turret, traverse, all hydraulic with auxiliary hand traverse

Radio: No. 19 set in rear of turret

Shock absorbers, hydraulic, four each side.

Armament

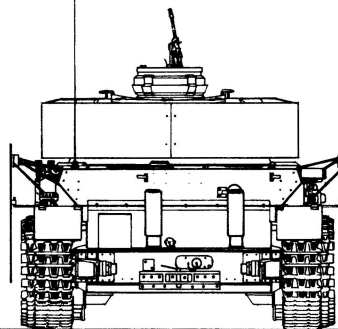
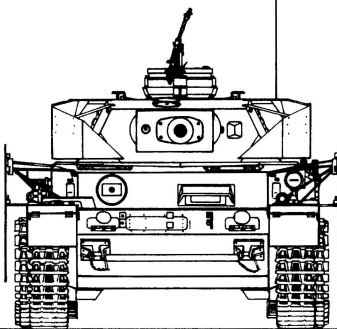
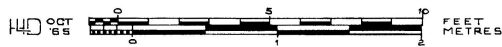
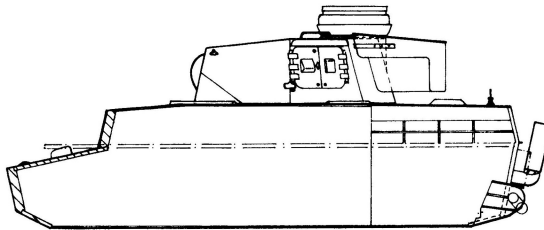
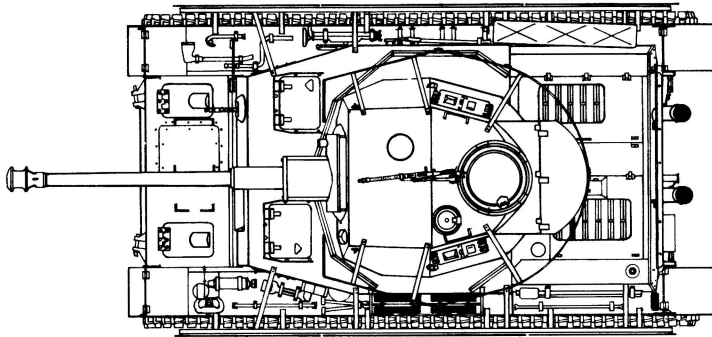
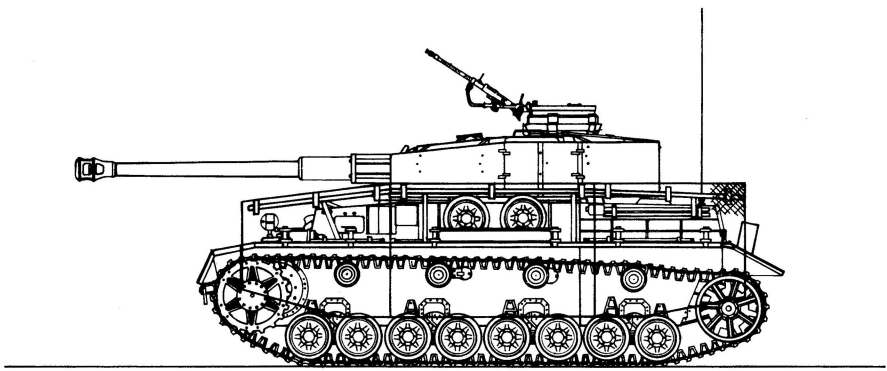
1 x 75 mm (75 rounds) 1 x 2 in. smokebomb thrower
(30 rounds), 2 x 7.92 Besa machine guns (4,952 rounds
- one co-axial.

Elevation: 20 degrees. Depression: 12½ degrees.

Armour

Maximum: 76 mm

Minimum: 6 mm



Panzerkampfwagen IV ausf J (10/BW) - 1944/45

Scale 1:76 (4 mm. to 1 foot). Drawn by H. L. Doyle

Panzerkampfwagen IV ausf J (10/BW) - 1944/45

As early as February 1943, it was proposed that the production of the PzKw IV be abandoned in favour of the new Tiger and Panther tanks. These suggestions were vigorously opposed by generals like Guderian, who realised that this was the most important tank available in quantity. Tigers, at that time, were only being produced at the rate of 25 per month, and as yet Panthers had not seen battle. Eventually, Hitler ordered that production be continued, at least, until the beginning of 1944. In fact they continued to be built at the Nibelungen Werke until the Germans surrendered, two basically similar models having been produced in the intervening years.

In March 1943, the first of these new models left the factory, this being the Ausführung 'H' (9/BW), the first vehicle to embody the heavier frontal armour and KwK of 48 calibres length, as ordered by Hitler the previous June. This model can be recognised from its new cast drive sprocket. Despite the heavy front plates, the side armour remained very inferior at only 30 mm. thick. To increase protection against hollow charge projectiles (i.e., Bazooka, Russian anti-tank charges etc.) 5 mm. plates were hung loosely from rails at the sides. This was called 'apron' (Schürzen) and its purpose was to detonate such projectiles before they came in contact with the main plate. Similarly, 8 mm. plates were used to protect the turret but, in this case, they were a permanent fixture. Most vehicles of this period were also coated in 'Zimmerit', an anti-magnetic plaster, to prevent charges from being attached. The 'apron' was retrospectively fitted on many German tanks and assault guns then in action.

Production of the PzKw IV was again threatened in October 1943 when the Todt organisation, then building fortifications on the West Wall, suggested that the turrets of this tank would be most suitable for use on strong points. Fortunately for the Panzer army, this idea was dropped.

Throughout the Winter of 1943 and until mid-1944 this vehicle bore the brunt of fighting on all fronts. In March 1944, a new version appeared, the Ausführung 'J' (10/BW). Due to general simplification and improvement, the weight of this model was slightly lower than the 'H', and in furtherance of this policy meshed wire aprons were sometimes utilised. These, coupled with a new gear box fitted in the later 'H's gave an improved performance, especially across rough ground. To increase fuel capacity, the power traverse for the turret was removed in favour of a two speed hand gear. The wading ability was increased to 4 feet (120 cm.); a new U-section idler was also fitted.

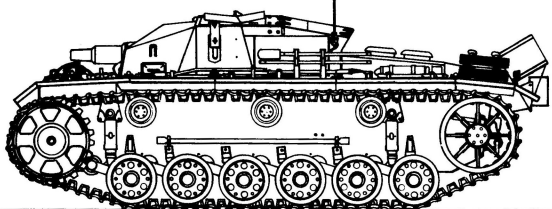
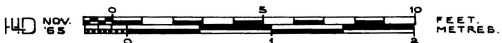
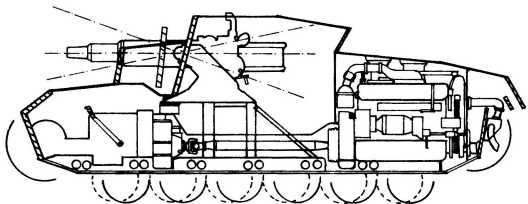
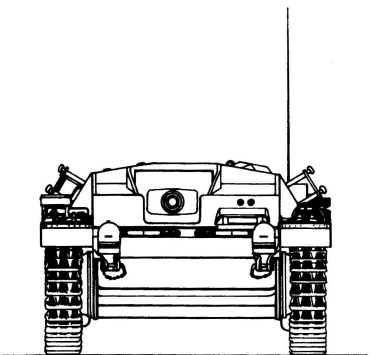
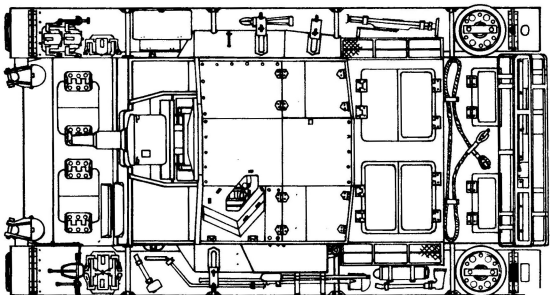
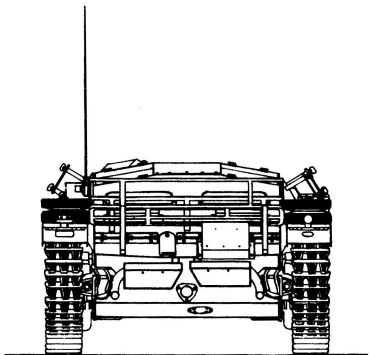
The version shown is fitted with 'ostkette', the mesh apron, and a simplified exhaust system. 'Ostkette' (east tracks), as the name implies, were developed for use on the Russian Front and were used only for movement on mud or snow. These gave better weight distribution but due to their one-sided action they were easily shed. Large numbers of this type of PzKw IV (with normal track) were employed with the Panzer Divisions engaged in the ill-fated Ardennes offensive of December/January 1945, but they were first encountered in action by the Allies, in small numbers, in August 1944, in both France and Italy. The majority were, of course, used on the Russian Front. To increase fuel capacity, the power traverse was removed in favour of a two speed hand gear.

Instead of the production slacking, as had been proposed in 1943, output made a startling rise. In the last two years of the war nearly 6,000 examples of the 'H' and 'J' left Nibelungen Werke and Krupp-Gruson AG, Magdeburg. Components and chassis were also built by the Deutsche Eisenwerke and Vomag, but these were used as the basis of the many different types of self-propelled guns and Jagd Panzers which utilised the PzKw IV chassis.

An exception to the above was the Stürmpanzer IV 'BrummBär' (series 4, No. 14g) the chassis of which was from Nibelungen Werke. The PzKw IV, mounting these medium length KwK's was appreciated as a most reliable and battle-worthy Tank. It was numerically and tactically the most important German tank of World War 2.

PanzerKampfwagen IV Model 'J' 1944/45 (10/BW) - 1944 Specification

Crew: 5	Armament
Weight: 25 tons	1 x 7.5 cm. KwK 40, L/48, with 87 rounds
Performance	Sight ranges: 2,500 yards for Armour piercing
Speed: Max. road 24 mph (38 km. ph)	Ammo. (2,286 metres)
Cross country 15 mph (24 km. ph)	3,500 yards for HE (3,200 metres)
Max. Gradient: 30 degrees	2 x 7.92 mm. MG 34. (One Co-axial with KwK)
Fording: 4'0" (120 cm.)	3,150 rounds.
Trench: 7'9" (235 cm.)	Sight ranges: 1,200 yards (1,100 metres)
Step: 1'11 $\frac{3}{4}$ " (60 cm.)	Armour
Range: 200/131 miles (320/210 Km.)	Nose: 80 mm. at 78 degrees
Fuel capacity: (internal) 150 gallons (680 litres)	Driver's front plate: 80 mm. at 80 degrees
Dimensions	Turret: 50 mm. at 79 degrees
Length overall: 23' 4 $\frac{1}{2}$ " (702 cm.)	Mantlet: 80 mm.
Width with ostkette 10'5" (318 cm.)	Sides, Hull: 30 mm. at 90 degrees (also 5/8 mm Mesh)
Width inc. Schurzen: 10'9 $\frac{1}{2}$ " (333 cm.)	Turret: 30 mm. at 64 degrees (also 8 mm. Schurzen)
Height: 8'10" (268 cm.)	Rear, Hull: 20 mm. at 78 degrees
Ground clearance: 1'3 $\frac{3}{4}$ " (40 cm.)	Turret: 30 mm. at 74 degrees (also 8 mm. Schurzen)
Track on ground: 11'6 $\frac{3}{4}$ " (352 cm.)	Belly: 10 mm.
Track width: (ostkette) 1'10" (56 cm.)	Deck, Hull: 16 mm.
(normal) 1'3 $\frac{3}{4}$ " (40 cm.)	Turret: 16/30 mm.
Mechanical Details	
Engine: 1 x Maybach HL 120 TRM. V-12, 11.89 litre watercooled petrol, developing 300 bhp at 3,000 rpm.	
Gearbox: SSG. 77.6 forward, 1 reverse	
Suspension: semi-elliptic leaf springs acting on twin wheel bogies.	



Sturmgeschütz 7.5 cm. Kanone auf PzKw III Ausf D-1941

Scale 1:76 (¼ mm. to 1 foot). Drawn by H. L. Doyle

Sturmgeschütz 7.5 cm. Kanone auf PzKw III Ausf D-1941

Experience gained during the first war, led the German army to request an armoured mobile gun, capable of advancing with the infantry and destroying local strong points, when artillery was not available, or capable of doing this task.

A design suggested by Von Manstein was eventually adopted; this was a low vehicle that would rely upon a compact silhouette, rather than heavy armour, for protection. This requirement, and the fact that it was not intended to engage tanks, made it unnecessary to have a large traverse and therefore a turret was not essential.

The gun deemed suitable for the role was the short 7.5 cm. piece then fitted in the PzKw IV. Again a standard chassis, for reasons of economy and standardisation, had to be utilised. The PzKw II was a shade too small, and, in any case, it was not anticipated that it would continue in production for very long. Thus, the chassis of the PzKw III was selected.

The first series of these "Assault Guns" went into production in February 1940, and five examples appeared in time to see action in the invasion of France. With the commencement of full production in September 1940 the official title of "Gepanzerte Selbstfahrlafette fuer Sturmgeschütz 7.5 cm. Kanone" was announced. Two models appeared between then and early 1941, based on the chassis of the PzKw III 'E' and 'F' respectively (4/ZW and 5/ZW); these were similar in external appearances and they will be described later in this series.

Being unhampered by weighty turret equipment, it was found that heavier frontal plates could be used on the assault gun than on the tank - 50 mm. in place of 30 mm. The 30 mm. superstructure sides were further protected by 9 mm. angled spaced plates which faired into the vertical side plates. There was also an armoured pannier on the left side which housed radio equipment.

For economic and technical reasons, the gun mounting was somewhat primitive and did not offer any splash protection for the crew. The opening was, in fact, sealed only by a canvas dust cover. The vertical axis pivots protrude from the cabin and these can be seen from the plan view.

March 1941 saw the introduction of a new and improved version, the model 'C' built on the PzKw III 'G' chassis (6/ZW). This is recognisable by the later type of drive and idler sprockets used. A major improvement to the front superstructure was achieved by the use of an artillery sight projecting through the roof, rather than through a large frontal aperture as on previous types.

In July 1941, the model 'D' appeared, built on the latest tank chassis, PzKw III 'H' (7/ZW). The transmission was improved to suit the better engine in use, and a new SSG7/ six speed manual gearbox replaced the highly complex 10 speed pre-selective type previously fitted. The result of these modifications, both on the tank and assault guns was to increase speed and general performance. A modified track was fitted on this model, and was retrospectively adopted for all versions. It featured slots in the edge of each shoe, allowing "grousers" to be fitted for snow traction.

These later models carried the Stuk 37, 7.5 cm. L/24, a modification of the former piece, and for this 44 rounds of ammunition were carried. Also, the commander (left rear station) was equipped with a scissors type telescope, for observing fire, and this was arranged to project through the forward section of his access hatch, which could be opened without having to raise both sections. The telescope and the commander's seat could be raised and lowered at will for viewing from either outside or inside the fighting compartment. No other observation was provided for the commander as tank versus tank duels were not contemplated. However, a klaxon horn was provided for transmission of urgent messages to the driver.

Most model Ds saw service on the Russian Front in the terrible Winter of 1941/42. Here they were forced into use as tank destroyers which they were unable to do satisfactorily due to the inadequate gun and sighting arrangements. As a result, in February 1942, the first versions appeared mounting the medium StuK 40. L/43, designated Model 'F'.

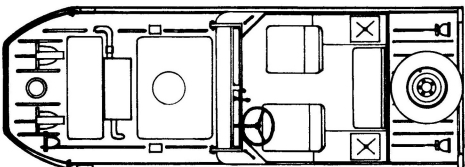
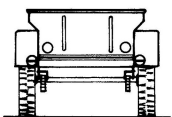
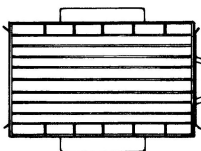
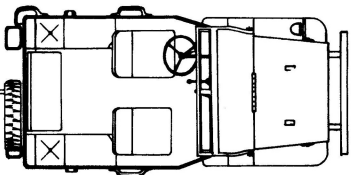
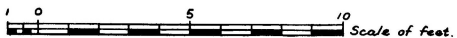
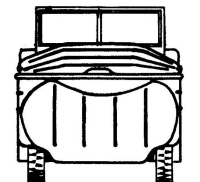
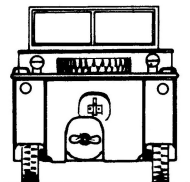
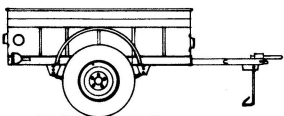
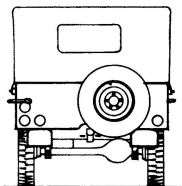
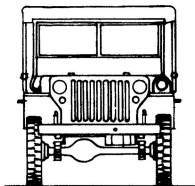
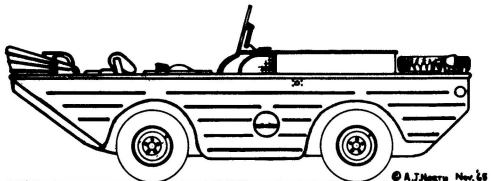
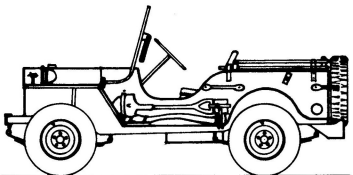
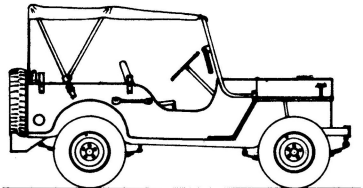
The drawing depicts one of the few model Ds employed by the DAK in Africa. It was in fact captured by the British in 1942. Notable features include rack at the rear for water cans, brackets for five spare bogie wheels and two spare torsion bars on the hull sides. When captured it had covered 1,730 miles and despite receiving several direct hits none had penetrated. The armoured box at rear houses smoke dischargers.

Production was by Alkett GóMH of Berlin and approximately 700 were built.

This vehicle can be modelled on the chassis of the Airfix StuG III.

Sturmgeschütz 7.5 cm. Kanone auf PzKw III Ausf D-1941 Specification

Crew: 4	Armament
Weight: 22 tons (laden)	1 x 7.5 cm. KwK L/24 with 44 rounds
Performance	Traverse: 12½ degrees to left and right
Speed: max. road 25 mph (40 km.ph)	Elevation: Plus 20 degrees, minus 11 degrees
cross country 15 mph (24 km.ph)	Sight ranges: 5,400 yards (6,000 metres) for HE
Max. Gradient: 30 degrees	1,350 yards (1,500 metres) for AP
Fording: 2'7½" (80 cm.)	1 x 9 mm. MP38 carried in fighting compartment
Trench: 7'7" (230 cm.)	12 stick Grenades
Step: 1'11¾" (60 cm.)	Armour
Range: 102/59 miles (165/95 km.)	Nose: 50 mm. at 52/21 degrees
Fuel capacity: (internal) 68 gallons (310 litres)	Front vertical plate 50 mm. at 10 degrees (Driver's plate)
Dimensions	Front turret plate 50 mm. at 15 degrees
Length overall: 18' 0" (549 cm.)	Mantlet: 50 mm.
Width: 9'8" (295 cm.)	Sides, hull and turret 30 mm. vertical, additional
Height: 6'6" (196 cm.)	9 mm. plates on turret sides at 31 degrees
Ground clearance: 1'2" (36 cm.)	Rear, Hull: 30 mm. at 10/30 degrees
Track on ground: 9'5" (286 cm.)	Turret: 30 mm. at -30 degrees
Track width: 1'3¾" (40 cm.)	Belly: 16 mm.
Mechanical Details	Deck, Hull: 17 mm.
Engine: 1 x Maybach HL 120 TRM (built by Maybach and Norddeutsche-Motorenbau) V-12, 11.87 litres	Turret: 11 mm.
watercooled, petrol developing 300 bhp at 3,000 rpm.	
Gearbox: SSG 77, six forward, one reverse	
Steering: epicyclic clutch and brake hydraulically assisted.	
Suspension: 12 transverse Torsion Bars (one per wheel).	



Truck Utility, $\frac{1}{4}$ ton, 4 x 4, JEEP, M38 and Trailer $\frac{1}{4}$ ton, M100
 Scale 1:76 ($\frac{1}{4}$ mm. to 1 foot). Drawn by A.J.D. North

Truck Utility, $\frac{1}{4}$ ton, 4 x 4, JEEP, M38 and Trailer $\frac{1}{4}$ ton, M100

Best known and probably the most widely used military vehicle of all time, the Willys Jeep was derived from a design originated by the Bantam Car Company. This firm produced a small runabout car in pre-war days similar in size and type to the Austin 7. A US Army requirement in 1940 for a 'go-anywhere' field car led to the submission by Bantam of a design utilising components from their car and very similar in layout. This prototype was highly successful on trials and a small production and development batch of Bantams was subsequently ordered. By this time the international situation was such that a big requirement for these vehicles was foreseen by the US Army. The Bantam Company was so small, however, that they had not the resources or plant for production on the huge scale envisaged. This led to the transfer of production to the Willys Company, who incorporated some features of their own field car which had been designed in competition to the Bantam for the US Army trials. Such was demand at the height of the war, that Ford also undertook production of the same design. Their Jeep differed only in insignificant detail from the Willys-built version.

For amphibious purposes, a 'sea-going' version of the Jeep was also produced. This was almost exactly similar in design, shape and performance to the larger DUKW. It consisted simply of a boat-like body on the basic Jeep chassis. Propulsion afloat was effected by the propeller on a power take-off from the gearbox. Because of this vehicle's very low freeboard afloat, a canvas screen was provided around the bows and this could be raised in choppy water to prevent swamping. Other details were identical to the basic Jeep.

In service, the Jeep was intended for reconnaissance and liaison duties, but it was soon found invaluable for other work. At least two different kits of parts were produced to convert it to a front-line ambulance, and it was also used by other arms for OP., provost, wireless, recovery, and cargo purposes among many others. Both the US and British armies used armed 'recce' versions, while there was yet another conversion used in Eastern theatres which substituted flanged wheels for the road wheels to make the Jeep capable of railway operations. In some cases, Jeep railways formed vital transport routes. Wading equipment for the Jeep, consisted of a flexible 'breathing' tube from the engine supported by the windscreen, plus an exhaust pipe extension at the rear. This allowed the vehicle to drive in water up to 74 ins. in depth. Every Allied formation in World War 2 used Jeeps, including the Russians, who soon produced a field car design of their own incorporating several Jeep features. The Soviet Army also has a Russian-built copy of the Amphibious Jeep, virtually identical to the American model.

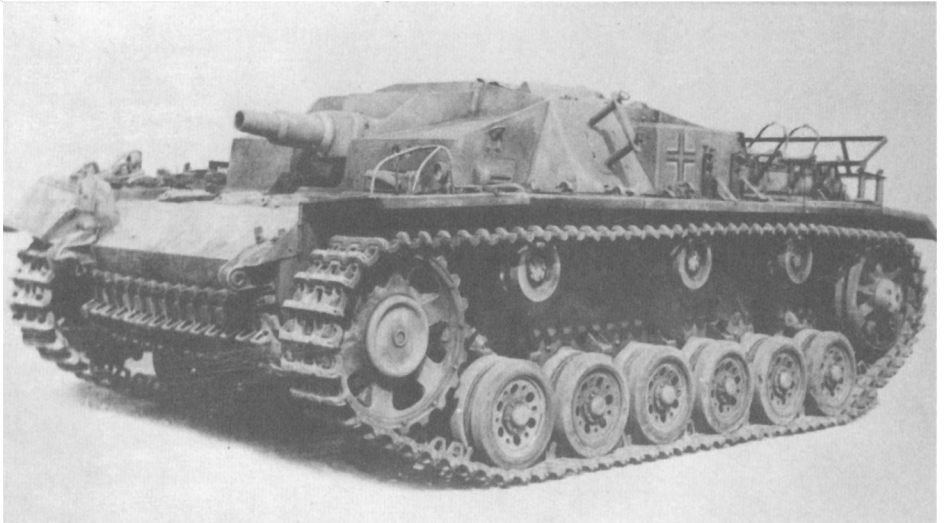
The $\frac{1}{4}$ ton trailer M100 was produced to increase the capacity transportable by Jeep. It is of all steel design and an important feature is its ability to float when loaded with up to 500 lbs. of cargo. A mechanical brake is incorporated, attaching to the Jeep's braking system.

M38 Jeep - Specification

Crew: 2 plus 2 passengers
Weight: 2,750 lbs. nett
Payload: 800 lbs. (cross country)
1200 lbs. (on roads)
Engine: Willys 4 cylinder in-line, 60 bhp at
4,000 rpm
Gear ratio: 5.38:1
Fuel: 13 gallons
Forward speeds: 3, transfer speeds: 2
Top speed: (official) 55 mph
Range: 225 miles (loaded)
Fuel consumption: 17.3 mpg (loaded)
Recommended towed load: 1,500 lbs. (cross country)
2,000 lbs. (on road)
Ground clearance: $9\frac{1}{4}$ ins.
Tread: $49\frac{1}{8}$ ins.
Turning circle: 20 feet (right) and 19 feet (left)
Fording depth: 74 ins.
Gradient: 65 degrees

M100 Trailer

Weight: 565 lbs.
Payload: 500 lbs. (cross country)
750 lbs. (on road)
Capacity: $28\frac{1}{2}$ cubic feet
Ground clearance: $13\frac{3}{4}$ ins.
Loading height: (empty) 42 ins.
Inside dimensions: 38 ins. wide, 18 ins. deep,
72 ins. long



Stug III model D showing distinctive features of earlier models.
Note radio housing on side, spare road wheel brackets, and rear stowage for jerricans

The Jeep came in many versions. This is fitted with a single deck ambulance kit and extended cover





A



B



C



D

[Signature]
1965

PANZER UNIFORMS

Worn by German armour personnel 1939-45

A - all black combat dress worn by tank, armoured car, and Elephant (Ferdinand) crews . Also worn by assault gun and tank destroyer crews in Panzer and Panzer Grenadier Divisions. Shirt was mid-grey, changed to light green in 1944. A scarf or muffler was also sometimes worn, not shown in the drawing. Pink piping was stitched round collar edge and round collar patches, but this was omitted towards the end of the war. The belt buckle was in dull metal, as was the small skull badge in the collar patch. Figures A and B are wearing the 1943 pattern peaked forage cap, and C is wearing the older fore and aft forage cap. For summer and fatigue wear, crews were issued with a light green twill uniform of identical cut to the black dress.

B - the field-grey combat uniform worn by all other self-propelled tank crews. It was of identical cut to the black tank uniform. Sometimes a map pocket was incorporated on the breast. A green twill fatigue suit of the same cut was also issued.

C - Waffen-SS tank crews wore a basically similar black uniform, with the following differences: (a) collar patches had a stylised 'SS' symbol on a black ground, except in divisions with their own distinctive badges. (b) The eagle emblem was worn on the upper left arm with a divisional name band round the cuff. (c) A skull badge was worn on the cap beneath the eagle. Sometimes the eagle emblem on the cap was also worn on the left hand side.

D - Waffen-SS crews were also issued with a one-piece camouflage overall suit. The colours were in green and brown patches on a khaki/light brown base. As with all the other uniforms shown here, the trousers were gathered in at the angles and sometimes were worn with anklets. Black high cut shoes were standard issue.

E - National emblem consisting of a silver/grey eagle on a dark green or black base. Worn on right breast by all army personnel.

F - Skull 'death's head' badge worn in collar patches of army armoured crews and by Waffen-SS Totenkopf Division; also the Waffen-SS tank crews cap badge.

G - National emblem of the Waffen-SS differed in pattern from the army emblem. Worn on left arm and either front or left side of forage cap.



E



F



G

